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BRIEF COMMUNICATION

GROWTH IN THE AUSTRALIAN BURROWING FROG, *CYCLORANA AUSTRALIS* (GRAY) (ANURA: LEPTODACTYLIDAE)

The majority of known Australian fossil frogs have been identified by the characteristics of the ilium, a distinctive bone in which the morphology varies greatly between family, genus, and species[1-3]. Hence it is now used extensively as a diagnostic tool[1-3].

The physical characteristics of the frog can be identified from the size and points for muscular attachment on the ilium. These features represent adaptations to the environment. For example a short ilial shaft is characteristic of a burrowing frog which does not make long jumps[1,2,4].

To permit extrapolation of the size of a frog from the length of the ilium requires an understanding of the relationship between the ilium length (IL) and snout to vent length (S-V).

It is generally considered that the ilium grows linearly in relation to the S-V of the donor animal[3].

However, the data from which these assumptions are made have been based on small sample sizes, and little is known of early ontogenetic changes[1,3,5]. It is also important to note that it is common in the Animal Kingdom for a change in size to result in a change of the proportions of the body. A simple example of such allometric growth can be seen during the development of human beings, in which a large change in the proportions of the limbs and the head, in relation to trunk size, can be seen when children are compared with adults[6].

This study was an attempt to determine the nature of growth, from juvenile to adult form, of the burrowing frog *Cyclorana australis* (Gray, 1842) via the relationship between ilial length and snout-vent length.

The ilia examined were dissected from 24 preserved specimens in the collections held at the Department of Zoology, University of Adelaide. Before dissection the S-V of each specimen was measured with a pair of NSK electronic digital callipers. The pelvis was then removed, and soaked in bleach to loosen muscle, before being transferred to a 37°C oven to dehydrate for 24 hours. The IL for each ilium was measured using electronic digital callipers, with the aid of a Wild M3 dissecting microscope. Ilial length was expressed as the distance between the tip of the dorsal acetabular expansion, and the end of the ilial shaft[1].

The characteristics of the ilium of the specimens examined did not differ significantly from those described[1] (see Fig. 1). The S-V ranged 20.0 mm to 83.1 mm, and IL 6.1 mm to 32.0 mm.

A linear regression comparing IL with S-V showed a direct relationship between the body length and the length of the ilium, i.e. the ilium grows linearly in relation to the body length throughout ontogeny (see Fig. 2).

The linear growth of *C. australis* permits a very accurate method for estimating the size of an individual from a disarticulated ilium.

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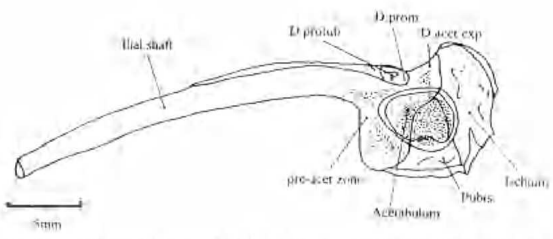

Fig. 1. Left lateral aspect of *Cyclorana australis* pelvic girdle. (IL = 30.6 mm, S-V = 82.1 mm).
Abbreviations: D. acet. exp.—dorsal acetabular expansion; D. prom.—dorsal prominence; D. protub.—dorsal protuberance; pre-acet. zone—pre-acetabular zone.

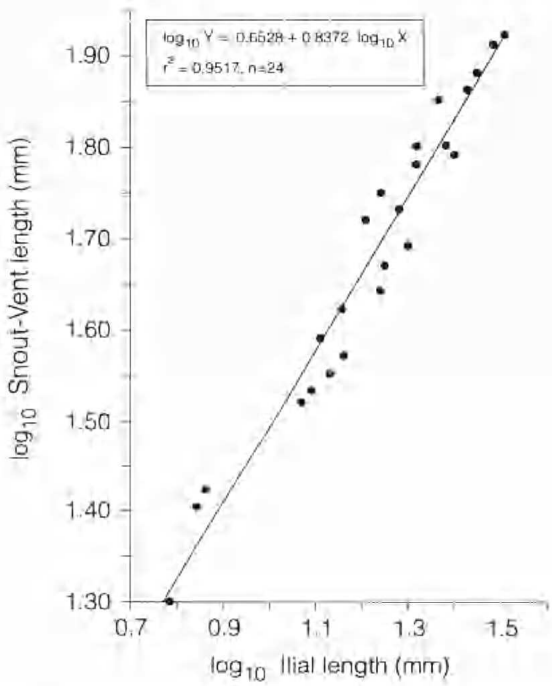

Fig. 2. Regression line of ilium length of *Cyclorana australis* with snout-vent length. For $\bar{x}$ = 18.30 mm, $\bar{y}$ = 51.25 mm (95% confidence limits = 49.36 – 53.23).

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STEVEN J. WALKER, 12 Preston St., Blair Athol, S. Aust. 5084